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*Motion Study: A Method for Increasing the Efficiency of the Workman.* By FRANK B. GILBRETH. (New York: D. Van Nostrand Company. 1911. Pp. xxiii, 116. \$2.00.)

Mr. Gilbreth's *Motion Study* is a description of some of the factors which determine a workman's product, and of means of so controlling them as to increase it. In general the control of quality of product is taken for granted, the application of motion-study being restricted to problems of saving strength and time and diminishing discomfort. The now familiar theses of the propaganda for Scientific Management—that the skilled workmen of a trade do not know how to do their work economically, that the skilled managers of workmen do not know what general conditions, apparatus, tools and instructions to provide, and that impartial, accurate, and ingenious study of the work and workman improves matters greatly—are illustrated in the case of brick-laying.

The suggestions made range from fundamental and neglected matters, such as the superiority of continuous, 'free' movements whose finer end-adjustments are guided by external situations like the impact of the brick against the wall as already laid, over jerky, 'forced' movements whose finer end-adjustments are guided more or less by internal decisions, to very specialized and obvious matters, such as putting the wheelbarrows near the sand, providing rests to set shovels against, or having the elevator carry the barrows to a level above the place of their unloading.

Mr. Gilbreth makes little use of any of the findings of the physiologists and psychologists, quoting nothing more technical than the *American Magazine*! He has, however the utmost theoretic respect for them and pleads for the study of industrial action and thought by experts in the general sciences of body and mind. It seems fair to expect with him that the methods of trade-schools, as well as of industry, will be much improved by the combined influence of impartial studies, on the one hand, of particular movement-series, both those conventionally used and those possible, and on the other, of the general facts of muscular work and fatigue. For example, the relation of the act to be accomplished to the original, unlearned, 'natural' movements such as running, dodging, grasping, throwing or pulling, is probably a matter of great importance.

One general issue raised by Mr. Gilbreth certainly deserves immediate expert study. He advocates, in the training of appren-

tices, teaching the entire movement-series at full speed first and leaving precision to be got later. This I cannot believe he has tested experimentally. And even if it proved to be the most effective method of teaching brick-laying, I should still doubt the generality of the rule. The extreme opposite practice of insisting on a very high standard of precision at the start may well be equally bad, but there is every reason to believe that the essential 'form' of a movement-series can usually be acquired better first at a rate much slower than that at which it will eventually be used. There is also in this respect an enormous variation amongst manual arts. Typewriting must sacrifice speed to precision almost altogether at the start. Handwriting need do so far less.

Many professional students of physiology, psychology or economics will regard Mr. Gilbreth's analysis of the worker, his surroundings, equipment and tools, and the motions he makes, as superficial, and his discoveries and reforms as nothing beyond enlightened common sense. That is perhaps fair. But it is equally fair to look at this work as the conquest of 'use and wont' by reason on a new battle-field, and to hail the scientific diagnosis of laying brick as a fine adventure.

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#### NEW BOOKS

BEECHING, C. L. T. *Grocery business organization and management.* (London: I. Pitman. Pp. vii, 164. 5s.)

BOLTON, R. P. *Building for profit; principles governing the economic improvement of real estate.* (New York: The De Vinne Press. 1911. Pp. iii, 124. \$2.00.)

Discussion based largely on conditions in New York City.

BULL, A. E. *Sound business. How its principles may be learned and put to practical use.* (London: Cassell. Pp. 299. 6s.)

BUNNELL, S. H. *Cost-keeping for manufacturing plants.* (New York: D. Appleton & Co. 1911. \$3.00.)

CHASE, W. A. *Higher accountancy, principles and practice.* 2 vols. Issued also as a part of *Business Administration*, edited by W. D. MOODY. Vol. I on *Accounting*, by H. P. WILLIS and others; Vol. II on *Auditing and Cost Accounting*, by W. A. CHASE and others. (Chicago: La Salle Extension University. 1911. \$6.00.)

DUNKHASE, W. *Die patenfähige Erfindung und das Erfinderrecht unter besonderer Berücksichtigung des Unionsprioritätsrechts.* (Leipzig: G. J. Göschen. 1911. Pp. 141. 2.80 m.)